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RELATING SELECTION PREDICTIONS TO ATTRITION  
IN THE BRITISH INFANTRY



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The current selection system for non-officer ranks is described with details of previous validation work. Typically low non-significant correlation coefficients were obtained with Infantry groups. Current work in this area is severely hampered by the lack of suitable criteria but strategies for overcoming this are under discussion. Length of service was correlated with selection results for an Infantry group and no correlations could be demonstrated. However, data used show that exit rates are dependent on individual training depots. The effects of civilian unemployment in depressing wastage directly and indirectly (by raising the ability of serving soldiers as a population) are discussed.

## RELATING SELECTION PREDICTIONS TO ATTRITION IN THE BRITISH INFANTRY

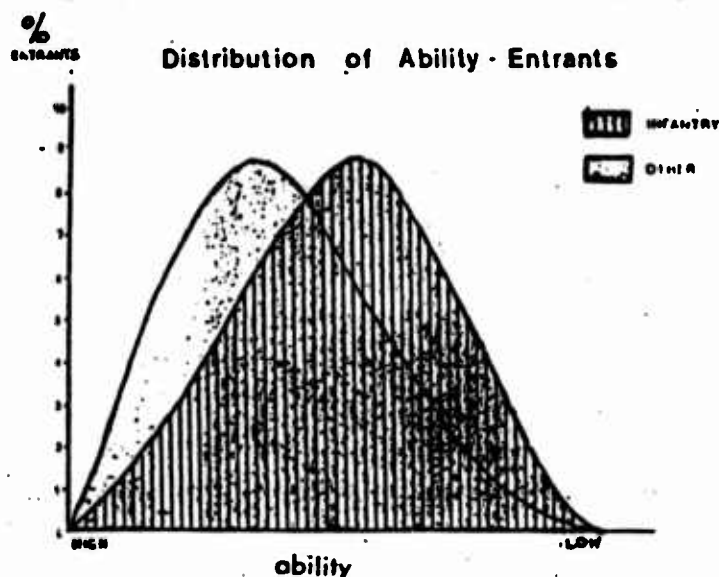
### INTRODUCTION

1. The initial aim of this research was to evaluate the validity of the tests currently used to select Infantry soldiers in the British Army. However, due to problems associated with the availability of suitable criteria for these purposes, the data collected, was used for a second purpose; that of examining the wastage rates from two comparable Infantry training depots. Unemployment, a key factor in this instance, is also relevant in any discussion of the recruitment pool and consequently test effectiveness. These three topics, validity, attrition and unemployment are therefore the main areas discussed in this paper.

### BACKGROUND

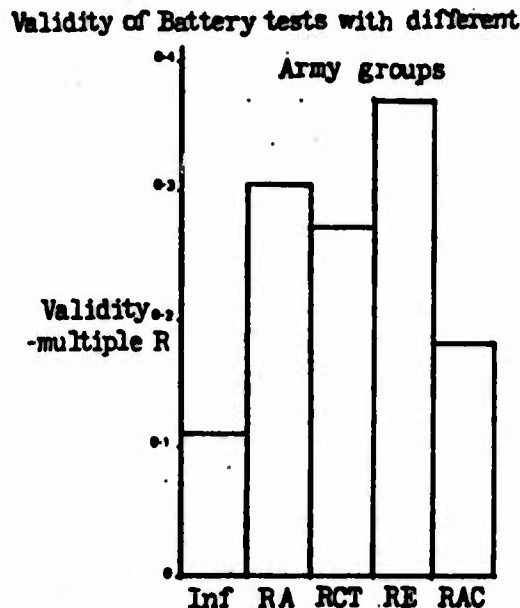
2. The British Army was established as an all-volunteer force from 1960. In recent years, recruitment targets have been set around the 20,000 mark (men, women and junior entry) though, due to the current economic climate targets are currently set much lower to offset a decline in the attrition rate. In 1971 a centralized selection system was set up and recruitment and selection is now seen as a two stage process. Recruitment, career guidance and initial selection are carried out at the local Army Careers Information Offices (there are approximately 170 of these distributed in major towns and cities in the UK). Subsequent allocation to one of the 180 employments for Adult males is made at the centralized selection centre on the basis of results from psychometric tests (pencil and paper achievement and reasoning tests), interview, medical and fitness tests. Final allocation is dependent on there being vacancies to match the applicant's level of ability and expressed choice.

3. Infantry soldier is just one of the employments which may be chosen and subsequently allocated. Approximately one third of a year's intake will be allocated as Infantry soldiers. The selection requirements in terms of test scores required are comparatively low, and the distribution of ability is somewhat skewed, as is shown below.



#### VALIDATION

4. In 1976 a study was undertaken by Killcross et al to determine the validity of the five battery tests in use at that time. Training criteria were used in this instance. The coefficients produced for different Army groups (Infantry, Royal Artillery (RA), Royal Corps of Transport (RCT), Royal Engineers (RE) and Royal Armoured Corps (RAC)) are shown below.



As can be seen the validity coefficient for the Infantry is lower than that for the other Arms and Corps investigated. This difference may have been even greater if job performance criteria were used, as one would expect greater degradation of training from lower ability groups such as the Infantry. Job content in the Infantry is also less closely related to attainment type tests than training criteria and possibly job content of more technical trades, another reason shown by Ghiselli (1966) to cause low validity coefficients.

5. Since this work was undertaken, the battery of 5 tests has been revised. All the tests have been changed to consistent multiple-choice format and the item content has been updated somewhat. The complete battery came into use in January 1981. At this point the problems of validating the revised tests were first noted. Having 180 employments, each with different entry requirements, it is both time-consuming and ineffective to manually match selection and training records for each employment. It is essential that information is available for individual training groups (different Arms and Corps undergo training of different types and lengths) as the validity estimate produced for a composite of mixed training groups may be much lower than for the individual training groups themselves (Killcross et al 1976). The use of the Army's computerised manning and records system as a data base for validation is an alternative approach.

6. A complete listing of soldiers allocated to the Infantry for November 1978 to October 1979 was obtained. As a sample, all those allocated to the various regiments of the Prince of Wales Division were selected. From the computerised system, limited information was then available. This included (in addition to personal details) details of initial selection (an overall grade only, no test-score details), promotion, specialist courses taken and exit dates. As a maximum, a soldier from our sample would have served three and a half years. Few had achieved promotion or specialist qualifications. The only criteria available was length of service. If a soldier has a three year engagement and wishes to leave at that three year point he must give notice at the 18 month point. From our data, we were therefore aware of the soldier's plans to leave, even if he had not yet left.

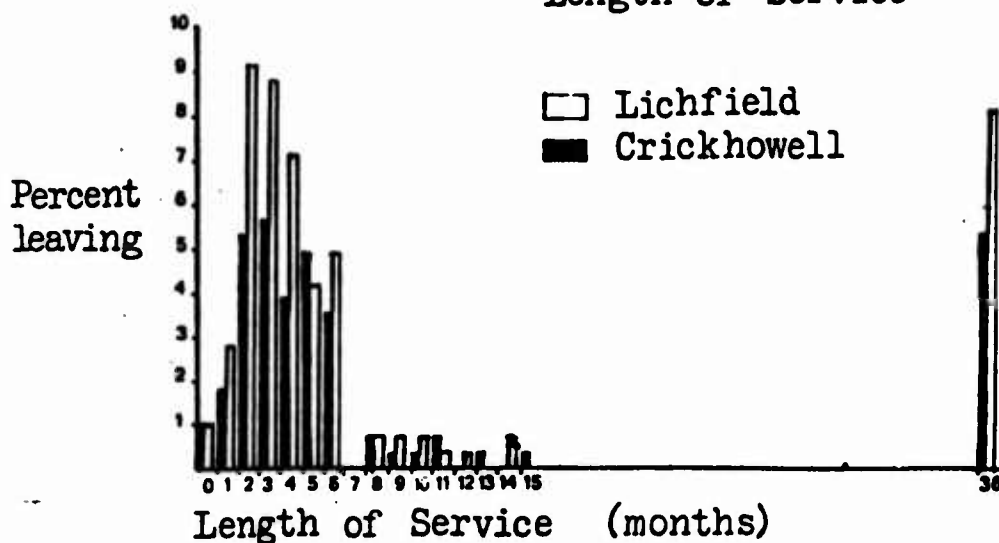
7. It was not possible, in this instance to use performance on the basic training course as a criterion, as detailed records are not available, and the pass/fail criterion recorded is inadequate as all those soldiers remaining in the Infantry do in fact pass. When the results of individual test scores were correlated with length of service, negligible coefficients were produced ranging from 0.01 to 0.05. This is as would be expected, due to lack of relevance, of the predictor to the criterion (Nagle 1953).

8. As has already been noted, the current economic climate has radically affected the size of the recruiting pool. In the past, when recruiting was more difficult, the selection ratio was very high and for the Infantry was almost equal to unity (excluding those unsuitable on medical or security grounds). Under these circumstances no test will operate with great efficiency and in fact there may be little point in using the tests at all (Taylor and Russell 1939). Now that the selection ratio is more favourable, the validity of the tests becomes more important. Recommendations for changes to the records system, which would allow suitable selection and training data to be stored, are currently under discussion.

#### ATTRITION

9. The data analysed, did however, show variations of interest. The Prince of Wales Division consists of a number of regiments, each recruited in a different area of the country. Some of the regiments receive their basic training at the Prince of Wales training depot at Crickhowell, South Wales, others at the second Prince of Wales depot at Lichfield in the Midlands. Differences in attrition rates between Divisions of the Infantry has already been demonstrated in an earlier phase of this project. Wastage rates varied from 20 - 50% for different divisions (1979-80 figures). Now, further analysis has revealed differences between depots within a division.

# POW Division Length of Service

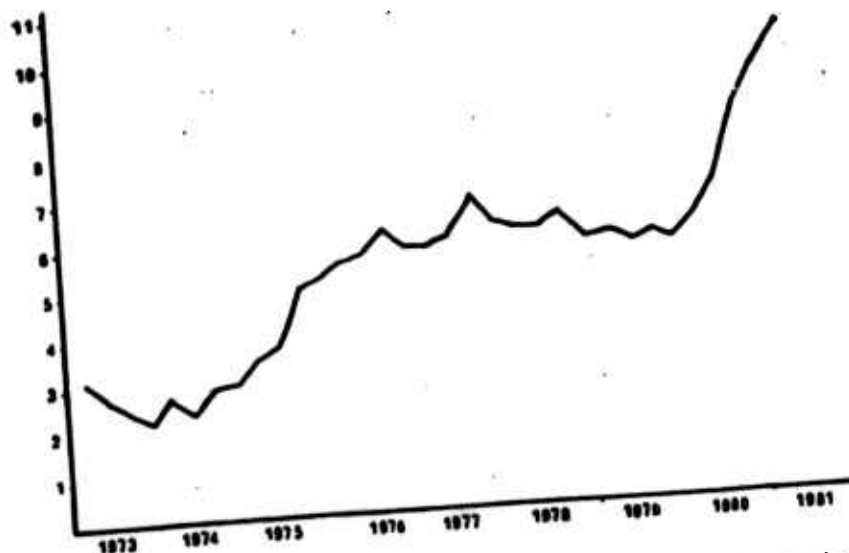


10. The pattern of wastage is, in fact, typical of the British Army as a whole. During the first 6 months of service the recruit has the right to leave the Army either free or on payment of a nominal sum. This period covers the time spent in basic training. After the 6 month point the sum payable is much increased, and few people leave of their own choice until the 3 year point, when their engagement may run out. The majority of the sample studied were in fact on 3 year engagements and most of those who remain after 6 months decided at some time during their first year to extend their engagement.

11. Great differences between the two training depots are also evident. Overall, attrition was far greater for soldiers trained at Lichfield (50% compared with 34% of Crickhowell trained soldiers). There are two areas of importance, firstly, the period covered by initial (basic) training at the depot itself (first six months) and secondly the numbers leaving (or having given notice to leave) at the three year point. In considering training wastage, it is not yet possible to separate the overall effects of external and internal factors. Work carried out in the Netherlands (Tromp, 1981) suggests that some proportion of wastage is dependent on the attitudes and instructional regimes of the training depot staff. These are internal factors. Work carried out in the UK (Dennison 1981) further relates wastage to civilian unemployment, an external factor. However, when examining subsequent attrition, it is likely that, now the training depot is no longer influential, civilian unemployment is a major factor.

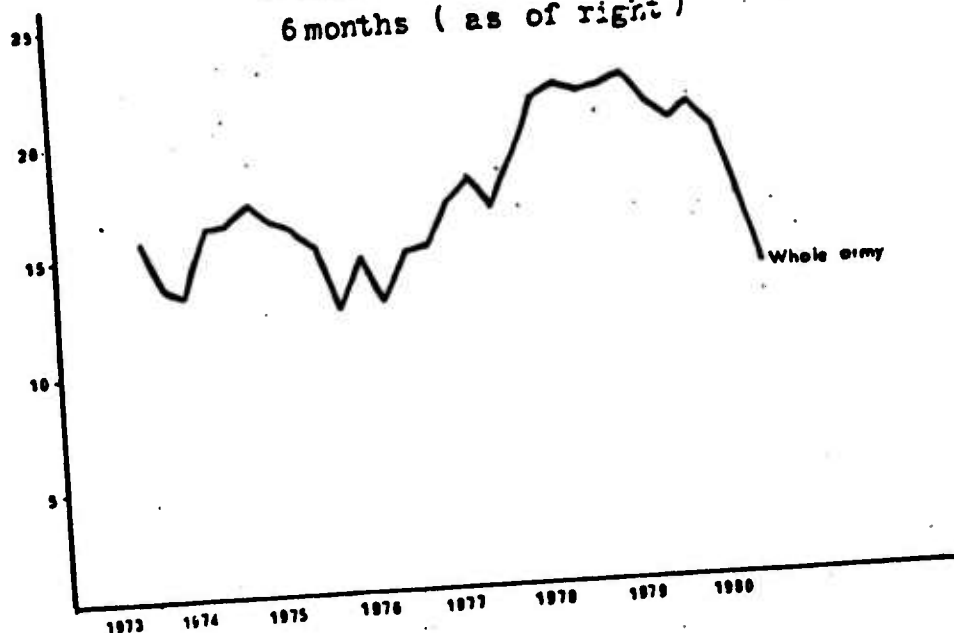
12. The link between civilian unemployment and attrition is obvious - as unemployment rises, fewer people leave the Army as of choice. During 1980/81 unemployment has risen steeply in Britain and currently stands at about 12% of the working population.

# Unemployment levels in UK (% of work force)

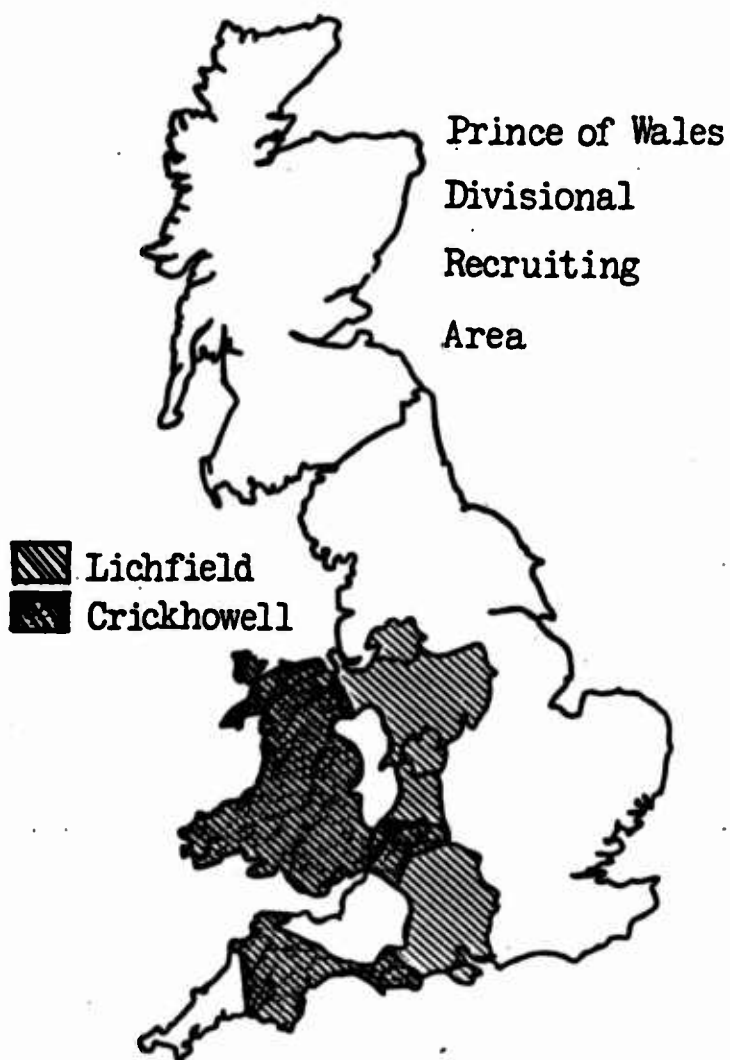


As can be seen, soldier wastage during the initial training period has dropped dramatically over the same period.

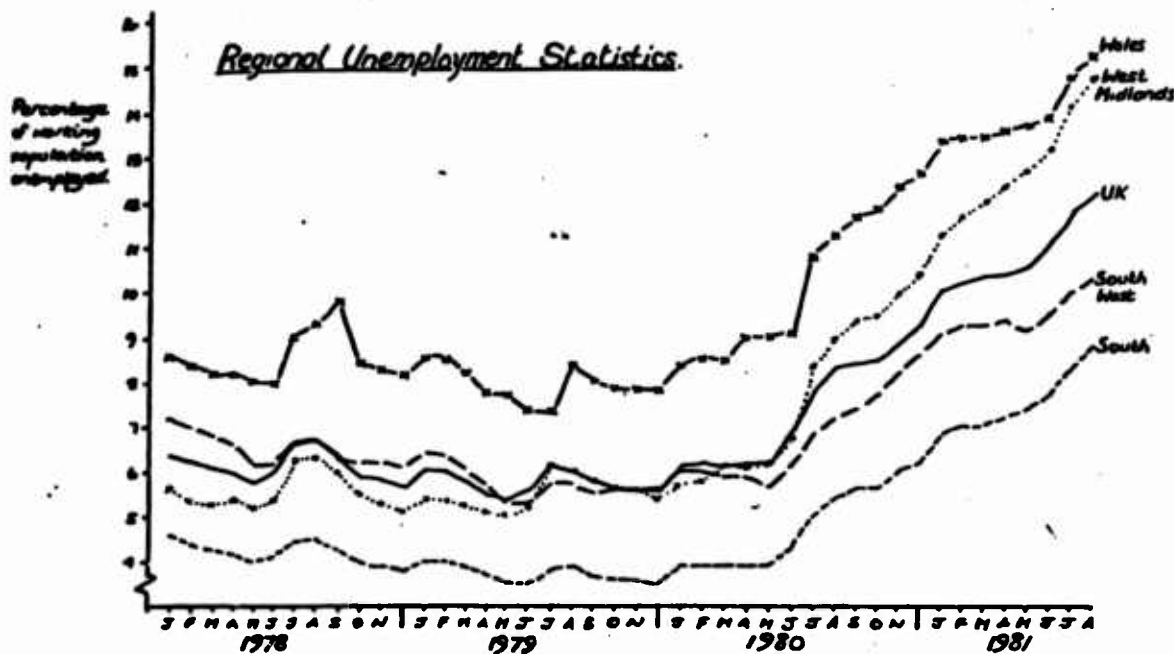
## Soldier wastage within the first 6 months (as of right)



13. Wastage is affected both directly and indirectly by unemployment rates. The direct effect is illustrated by the Crickhowell/Lichfield differences. Soldiers originally trained at Crickhowell come from Wales, Devon and Dorset, Avon and Gloucestershire. Lichfield trained soldiers originate from the Midlands and the South of England. These recruiting areas are shown below.



14. These regions have differing levels of unemployment as shown below.

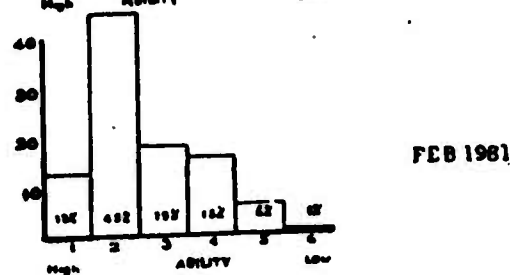
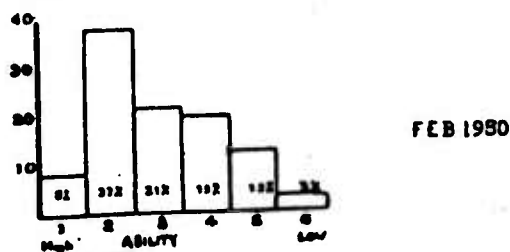
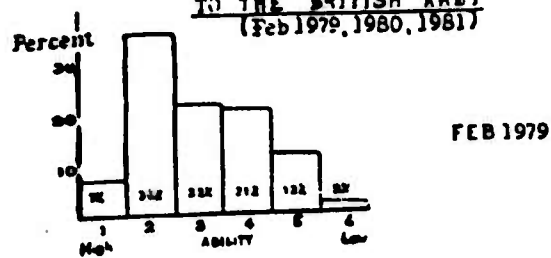


Overall, the Lichfield depot trains men from areas which have experienced lower unemployment over the past 3 years than those areas recruited to Crickhovel. We would expect attrition, especially at the three year point to be closely associated with regional unemployment. This effect would be even stronger if individual regiments, drawn from one area only, were considered.

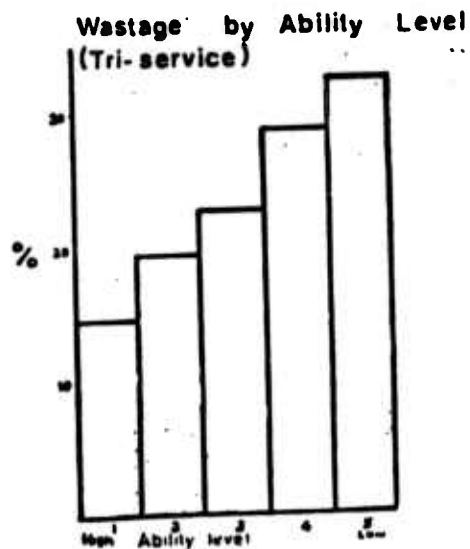
15. The effect of unemployment will be found throughout the initial training period in addition to the internal effects of the depot itself. Unemployment also affects the system indirectly. Increasing unemployment is one factor which improves the quality and quantity of applicants coming forward, as shown by Bellamy (1978). This improves the selection ratio and therefore effectiveness of any testing procedure (Taylor and Russell 1939) and increases the proportion of brighter candidates in the recruitment pool. Such a change has been observed over time in the British Army.



**ABILITY OF ADULT MALE ENTRANTS  
TO THE BRITISH ARMY  
(Feb 1979, 1980, 1981)**



16. Work carried out internationally by the Technical Co-operation Panel has shown that wastage is greater in lower ability groups. For the British services overall, this can be seen to apply.



It follows that a higher ability intake will, over time produce fewer losses. This effect, will of course, operate with a time lapse and may now be making its first impressions on the wastage figures.

#### CONCLUSIONS

17. Though previous research has been problematic and has produced only low validity coefficients, it is important to evaluate and monitor on a regular basis, the validities of selection tests, particularly, as is currently the case, in times of favourable selection ratios. Length of service is an inadequate criteria for this purpose. Unemployment has affected both recruitment to, and wastage from the Army, and local unemployment effects should be taken into account in a model which attempts to explain retention issues, in addition to factors in operation within the individual training depots. It is important to draw methodological conclusions in this instance. A broader approach to validation problems should be adopted as potentially useful data may otherwise remain untapped.

#### REFERENCES

1. Bellamy I (1978). A statistical analysis of factors affecting voluntary enlistment into the UK Armed Services 1960 - 1976. University of Lancaster.
2. Dennison (1981). Relating recruiting and selection predictions to wastage in the British Army. Paper presented to the 17th International Symposium on Applied Military Psychology. Lisbon 1981.
3. Fabyanic T A (1976). Manpower trends in the British All Volunteer Force. *Armed Forces and Society* Vol 2 No 4 August 1976.
4. Ghiselli (1966). The validity of occupational aptitude tests. New York. John Wiley Inc.
5. Killaross M C et al (1976). The validity of standard and experimental selection measures used in the Pilot Centralised Selection Scheme for Adult Recruits. *APRE Report* No 35/75.
6. Nagle B F (1953). Criterion development. *Personnel Psych* 6 271-289.
7. Taylor H C and Russell J T (1939). The relationship of validity coefficients to the practical effectiveness of tests in selection: Discussion and Tables. *Journal Applied Psych* 23 565-578.
8. Tromp Th H J (1981). Remarks and observations on the problems of adaptation concerning life in the Armed Forces. Paper presented to the World Psychiatric Association (Military Psychiatry Section), symposium on Adaptation to Military Service. Toulon 1981.